

FORM PTO-1390 (Modified) U.S. PATENT AND TRADEMARK OFFICE; U.S. DEPARTMENT OF COMMERCE
(REV. 7-2005)

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A SUBMISSION UNDER 35 U.S.C. 371**

ATTORNEY'S DOCKET NUMBER

873.0157.U1(US)

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

10/590671INTERNATIONAL APPLICATION NO.
PCT/US2005/006132INTERNATIONAL FILING DATE
23 February 2005PRIORITY DATE CLAIMED
27 February 2004

TITLE OF INVENTION

Constrained Optimization Based MIMO LMMSE-SIC Receiver for CDMA Downlink

APPLICANT(S) FOR DO/EO/US

Jianzhong ZHANG, Balaji RAGHOTHAMAN, Giridhar MANDYAM

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a submission under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a submission under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☐ The US has been elected (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c)(2))
 - a. ☒ is attached hereto (required only if not communicated by the International Bureau). *copy*
 - b. ☐ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☐ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☒ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☐ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 23 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A power of attorney and/or change of address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 37 CFR 1.821 - 1.825.
20. ☐ A second copy of the published International Application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the International Application under 35 U.S.C. 154(d)(4).
22. ☒ Express Mail Label No. EV 913 092 570 US

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

U.S. APPLICATION NO (if known, see 37 CFR 1.5) 10/590671		INTERNATIONAL APPLICATION NO. PCT/US2005/006132		ATTORNEY'S DOCKET NUMBER 873.0157.U1(US)	
23. Other items or information: Copy of Response to Invitation to Correct Defects in the International Application as filed on March 31, 2005					
The following fees have been submitted:				CALCULATIONS	PTO USE
24. <input checked="" type="checkbox"/> Basic national fee				\$300	\$
25. <input checked="" type="checkbox"/> Examination fee (37 CFR 1.492(c)) If the written opinion prepared by ISA/US or the international preliminary examination report prepared by IPEA/US indicates all claims satisfy provisions of PCT Article 33(1)-(4) \$0 All other situations.				\$200	\$
26. <input checked="" type="checkbox"/> Search fee (37 CFR 1.492(b)) If the written opinion of the ISA/US or the International preliminary examination report by IPEA/US indicates all claims satisfy provisions of PCT Article 33(1)-(4) . . . \$0 Search fee (37 CFR 1.445(a)(2)) has been paid on the international application to the as an International Searching Authority. \$100 International Search Report prepared by an ISA other than the US and provided to the previously communicated to the US by the IB. \$400 All other situations. \$500				\$0.00	\$
TOTAL OF 24, 25 and 26 =				\$300.00	\$
<input type="checkbox"/> Additional fee for specification and drawings filed in paper over 100 sheets (excluding sequence listing in compliance with 37 CFR 1.821(c) or (e) or computer program listing in an electronic medium) (37 CFR 1.492(j)). The fee is \$250 for each additional 50 sheets of paper or fraction thereof.					
Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof (round up to a whole)	RATE		
- 100 =	0 /50 =	0	x \$250.00	\$0.00	\$
Surcharge of \$130.00 for furnishing any of the search fee, examination fee, or the oath or declaration after the date of commencement of the national stage (37 CFR 1.492(h)).				\$	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	20 - 20 =	0	x \$50.00	\$0.00	\$
Independent claims	6 - 3 =	3	x \$200.00	\$600.00	\$
MULTIPLE DEPENDENT CLAIMS (if applicable) <input type="checkbox"/> + \$360.00				\$0.00	\$
TOTAL OF ABOVE CALCULATIONS =				\$900.00	\$
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. Fees above are reduced by 1/2.				\$0.00	\$
SUBTOTAL =				\$900.00	\$
Processing fee of \$130.00 for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492(i)).				\$0.00	\$
TOTAL NATIONAL FEE =				\$900.00	\$
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40 per property +				\$0.00	\$
TOTAL FEES ENCLOSED =				\$900.00	\$
				Amount to be	\$
				Amount to be	\$

10/590671

- a. ☒ A check in the amount of \$ \$900.00 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 50-1924. A duplicate copy of this sheet is enclosed.
- d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the International Application to pending status.

SEND ALL CORRESPONDENCE TO:

Customer No. 29683
Harrington & Smith, LLP
4 Research Drive
Shelton, CT 06484-6212
(203) 925-9400

SIGNATURE

Jeffrey R. Ambroziak

NAME

47,387

REGISTRATION NUMBER

DATE

24 Aug 06

10/ 590 671
IAP5 Rec'd PCT/PTO 24 AUG 2006

Express Mail No. EV 913 092 570 US
IN THE U.S. PATENT AND TRADEMARK OFFICE

In re U.S. Patent Application of:
Applicant: Zhang et al.
U.S. Serial No.:
International Application No.: PCT/US2005/006132
International Filing Date: 23 February 2005
Title: Constrained Optimization Based MIMO LMMSE-SIC Receiver for CDMA
Downlink

Attorney Docket No.: 873.0157.U1(US)

Certificate of Mailing

I hereby certify that the following correspondence:

Transmittal Letter to U.S. Designated/Elected Office
Preliminary Amendment
WO 2005/086500 A1 published application
Information Disclosure Statement with PTO-1449
International Search Report
Copies of Article 19 Amendment and Response to Invitation to Correct
Defects as filed
Check for \$ 900.00
Self addressed stamped post card

Is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, Mail Stop PCT.

Date: August 24, 2006


Elaine F. Mian

10/590671

PTO-1382 (Rev. 07-2004)

Approved for use through 3/31/2007. OMB 0651-0021

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL LETTER TO THE UNITED STATES RECEIVING OFFICE

IAP5 Rec'd PCT/PTO 24 AUG 2006

Express Mail mailing number:	EV661448828US	Date of Deposit:	March 31, 2005
File reference no.:	873.0157.U1(WO)	International Application no. (if known):	PCT/US2005/06132
Title of the invention: Constrained Optimization Based MIMO LMMSE-SIC Receiver for CDMA Downlink			
Earliest priority date claimed (Day/Month/Year):		27 February 2004 (27.02.2004)	

☐ This is a new International Application

SCREENING DISCLOSURE INFORMATION:

In order to assist in screening the accompanying international application for purposes of determining whether a license for foreign transmittal should and could be granted and for other purposes, the following information is requested (check as many boxes as apply):

- ☐ The invention disclosed was **not** made in the United States of America.
- ☐ There is no prior U.S. application relating to this invention.
- ☐ The following prior U.S. application(s) contain subject matter which is related to the invention disclosed in the attached international application. (NOTE: priority to these applications may or may not be claimed on the Request (form PCT/RO/101) and this listing does **not** constitute a claim for priority.)

application no.		filed on	
application no.		filed on	

- ☐ The present international application contains additional subject matter not found in the prior U.S. application(s) identified above. The additional subject matter is found on pages _____ and ☐ DOES NOT ALTER ☐ MIGHT BE CONSIDERED TO ALTER the general nature of the invention manner which would require the U.S. application to have been made available for inspection by the appropriate defense agencies under 35 U.S.C. 181 and 37 CFR 5.15.

Itemized list of contents

Sheets of Request form: _____	Check no.: _____
Sheets of description (excluding sequence listing): _____	Return receipt postcard: _____
Sheets of claims: _____	Power of attorney: _____
Sheets of abstract: _____	Certified copy of priority document (specify): _____
Sheets of drawings: _____ 5	Other (specify): _____
Sheets of sequence listing: _____	
Sequence listing diskette/CD: _____	
Tables related to sequence listing CD: _____	

The person signing this form is the:

- ☐ Applicant
- ☒ Attorney/Agent (Reg. No.) **32,493**
- ☐ Common Representative

Harry F. Smith

Name of person signing

Signature

This collection of information is required by 37 CFR 1.10 and 1.412. The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 15 minutes to complete, including gathering information, preparing, and submitting the completed form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

10/590671

IAP5 Rec'd PCT/PTO 24 AUG 2006

THE UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT COOPERATION TREATY

In Re PCT Application of: NOKIA CORPORATION et al.

Title: Constrained Optimization Based MIMO LMMSE-SIC Receiver for CDMA Downlink
International Filing Date: 23 February 2005
International Application No. PCT/US2005/06132
Attorney Docket No.: 873.0157.U1(WO)


Mail Stop PCT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO INVITATION TO CORRECT DEFECTS IN
THE INTERNATIONAL APPLICATION

Sir:

In response to the Invitation to Correct Defects in the International Application mailed on 21 March 2005, enclosed please find 5 sheets of formal drawings.

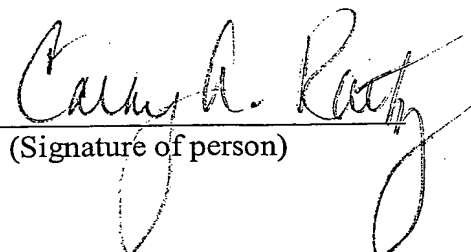
Respectfully submitted,


Harry F. Smith
Reg. No. 32,493
Customer No.: 29683
HARRINGTON & SMITH, LLP
4 Research Drive
Shelton, CT 06484-6212
Telephone: (203)925-9400
Facsimile: (203)944-0245
email: hsmith@HSpatent.com

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service on **March 31, 2005** and addressed to the Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Express Mail Label No. EV 661448828 US

Cathy A. Raetz
(Name of person mailing paper)


(Signature of person)

10/590671

LAP5 Rec'd PCT/PTO 24 AUG 2006

**IN THE U.S. PATENT AND TRADEMARK OFFICE
PATENT COOPERATION TREATY**

Appl. No. : PCT/US05/006132
Applicant : NOKIA CORPORATION, ET AL
Filed : 23 February 2005
Priority Date : 27 February 2004
Auth. Officer : Saadallah Soumia
Docket No. : 873.0157.U1(WO)

COPY

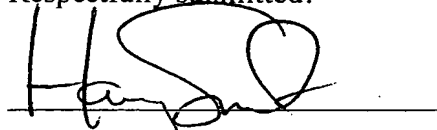
Mail Stop PCT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

ARTICLE 19 AMENDMENT

Dear Sir:

Appended to this Amendment are replacement pages 34-40 to replace originally numbered pages 34-40. Claims 1, 10, 13, 15, and 19 have been amended so as to read more clearly. No changes to the written description or other claims have been made, and no new matter is added.

Respectfully submitted:



Harry F. Smith

Reg. No.: 32,493

20 September 2005

Date

Customer No.: 29683
HARRINGTON & SMITH, LLP
4 Research Drive
Shelton, CT 06484-6212
Phone: (203) 925-9400
Facsimile: (203) 944-0245

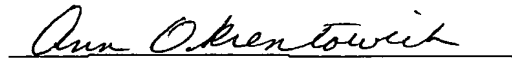
* * * * *

EXPRESS MAIL CERTIFICATE

Express Mail mailing label number: EV 713 826 425 US

Date of Deposit: September 20, 2005

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR §1.10 on the date indicated above and addressed to the Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



Ann Okrentowich